

2967 S Honey Creek Road
Greenwood, Indiana 46143
317-535-1829 (voice)
317-535-9806 (fax)



Livestock Engineering Solutions, Inc.

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DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
OFFICE OF LAND QUALITY

September 24, 2010

Janet Pittman
Indiana Department of Environmental Management
Rules Development Branch
Office of Legal Counsel
100 North Senate Avenue MC 65-46
Indianapolis, Indiana 46204-2251

**RE: LSA Document #09-615 (WPCB) (Confined Feeding Operations Rulemaking)
Development of New Rules at 327 IAC 19 Concerning Confined Feeding Operations
Comments on Second Notice**

Introduction

These comments are submitted in response to the *Second Notice of Comment Period* regarding the development of new rules at 327 IAC 19 concerning confined feeding operations. It is acknowledged that Michael Veenhuizen of Livestock Engineering Solutions, Inc participated in the Livestock and Poultry Rule Revision Group (Group) discussions and is identified in the comments submitted by this group. These comments have been prepared by Michael Veenhuizen, Livestock Engineering Solutions and are submitted individually to the Indiana Department of Environmental Management (IDEM).

It is clearly not an enviable task to prepare new rules and IDEM is to be complemented and recognized for their efforts in this task. In addition, thank you for the opportunity to submit these comments to IDEM for consideration as part of the new rules at 327 IAC 19.

General

Recognizing that many pertinent comments are included in the Livestock and Poultry Rule Revision Group comments document it is not the intent of these comments to repeat or reiterate previously submitted comments just for the sake of providing comments. By participation in the Group process, I provide general support of the comments provided by the entire group. To supplement the Group comments, the following additional comments are submitted.

Many years of experience working with IDEM and interpreting and implementing the existing rules concerning confined feeding operations has emphasized the importance that proper wording, accurate definitions, and appropriate references have in the interpretation and implementation of the rules. As a general comment, it is strongly recommended that a careful evaluation and interpretation of each term and reference used throughout the rule be conducted prior to preliminary and final adoption to ensure that the intended purpose and objective is achieved with each provision of the rule.

It is worth noting that the purpose of 327 IAC 19 is to impose construction and operational requirements for confined feeding operations (CFOs) in order to implement IC 13-18-10 and protect human health and the environment from threats to water quality. Consistent with the "purpose" of 327 IAC 19 each provision retained, modified, or added to this rule must be evaluated as to its contribution

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to supporting the "purpose". Those provisions that do not support the "purpose" of the rule must either be modified in accordance with the "purpose" or be deleted. In addition, it is important to consider whether the construction and operational requirements prescribed in this rule are practicable in meeting the requirement of protecting human health and preventing threats to water quality.

The review of this draft rule has identified many incorrect references to other sections of the rule. Where possible, these have been identified in the more specific comments provided. However, a thorough review and cross-check of the rule citations and references is essential prior to preliminary or final adoption of the rule to ensure a clearly interpreted and implementable rule.

327 IAC 19-2 Definitions

A broad range of terms are necessary to accurately represent the features, components, practices, and requirements within the rule. It is noted that many of the definitions are consistent with previous rules but that some have been changed, added, and deleted. A limited list of concerns regarding definitions is presented below.

The term "injection" has been deleted and included in the definition of "incorporation". Although similar, there are specific differences between injection and incorporation that need to be noted and provided for in this rule. **It is proposed to include the definition of injection separate from incorporation.**

"Injection" means the placement of liquid manure beneath the surface of the soil in the crop root zone using equipment specifically designed for this purpose.

19-2-22 "Manure": The definition of manure should not be changed from the definition included in 327 IAC 16-2-22. Simply stated "manure" is animal feces and urine (excreta) and materials commingled with animal feces and urine (excreta). The addition of "composted mortalities" to the definition of "manure" is out of context with the term and is inconsistent in its application. "Manure" and "composted mortalities" are two distinctively different materials and the requirements for each as it relates to this rule are different. These two terms need to be addressed separately within the rule. **It is proposed that the definition of "manure" not be changed and if necessary a new, separate definition of "composted mortality" be developed specific to the characteristics of this material.**

19-2-28 "Potentially available nitrogen": The definition of potentially available nitrogen has a direct impact on realistic manure application rates as determined by this rule. The current definition recognizes that potentially available nitrogen is a combination of nitrate nitrogen, ammonium nitrogen, and organic nitrogen. The current definition also recognizes that not all of the organic nitrogen is potentially available during the first year after application. This definition is absent the fact that not all of the ammonium nitrogen may be available during the first year after application. This oversight needs to be corrected and a provision for determining realistic losses due to handling and timing of application needs to be added to this definition. **It is proposed that this definition be revised and updated to more accurately represent the potentially available ammonium nitrogen component of manure.**

19-2-35 "Site preparation": The changes to this definition are necessary and appropriate. IDEM is complimented for developing a definition that includes a realistic description of many of the components associated with site preparation.

Rule 7 Application Requirements

327 IAC 19-7-1(a)(2): It is interpreted that all current animal feeding operation that has a General NPDES Permit will be required to apply for a CFO approval and submit an application that includes all of the information outlined in 19-7-1(c). For sites that are not making any changes this seems overly burdensome and unnecessary. A procedure to easily change from an existing General NPDES Permit under 327 IAC 5 or 327 IAC 15 to a Confined Feeding Operation approval is needed to eliminate duplicative efforts by producers and IDEM staff. **It is proposed that a specific procedure that does not include a completely new permit application be developed for this group of farms that choose to seek a confined feeding approval.**

327 IAC 19-7-1(c)(10): Is it still required to include adjacent land owners. If not, this requirement should be deleted.

327 IAC 19-7-1(c)(13): This provision is confusing and unnecessary. **It is proposed that it be deleted.**

Rule 12 Manure Handling and Storage; Site, Design, and Construction Requirements for Waste Management Systems

Draft rule definition repeated here for reference:

"Waste Management Systems" – any approved method of managing manure, mortality composting, or process wastewater at the confined feeding operation, including:

- (1) manure storage facilities;
- (2) manure transfer systems;
- (3) manure treatment systems, such as:
 - (A) a constructed wetland;
 - (B) a vegetative management system;
 - (C) a wastewater treatment system under a valid national pollutant discharge elimination system (NPDES) permit;
- (4) feedlots;
- (5) confinement buildings;
- (6) waste liquid handling, storage, and treatment systems; or
- (7) mortality composting systems

327 IAC 19-12-1(a)(3): Since this provision addresses flood plains and flood water the following change is proposed.

(3) in a one hundred (100) year flood plain, unless all waste management system access is at least two (2) feet above the one hundred (100) year flood plain and structurally sound without lowering **flood waters or** the seasonal water table **below the bottom of the waste management system;**

327 IAC 19-12-1(a)(5): Soil type and soil properties typically create seasonal high ground water conditions referred to as seasonal high groundwater such that seasonal high ground water occurs within the soil rather than the soil occurring in a seasonal high water table. The following change is proposed.

(5) in soil **types** that **are** is expected to **have a** ~~be in the~~ seasonal high water table, unless the water table is lowered to keep the water table below the bottom of the waste management system.

327 IAC 19-12-1(b): A review of 19-12-1(b) and 19-7-1(c)(7) and the interaction between these two provisions are confusing. It can be interpreted from the reference to 19-7-1(c)(7) in 19-12-1(b)(3) that the requirements of 19-7-1(c)(7) apply to earthen manure storage facilities located in areas of karst terrain. However, 19-7-1(c)(7)(C) is specific to non-karst areas. Further 19-12-1(b)(3) requires at least one soil boring to be completed to a depth of either bedrock or ten (10) feet below the lowest point of the waste management system. It is assumed that the others should be at least five (5) below the lowest point of the waste management system but the specificity of 19-7-1(c)(7)(C) to non-karst terrain areas does not provide clear requirements.

In addition, 19-7-1(c)(7)(D) refers specifically to areas of karst terrain and 19-12-1(b)(1). The "or" at the end of 19-7-1(c)(C) implies that 19-7-1(c)(A) – (C) does not apply to areas of karst terrain and that the requirements for karst terrain are provided in 19-12-1(b)(1). This requires "Characterization of the seasonal water table and soil" and appears to be too specific of a reference as it is included in 19-7-1(c)(7)(D).

As written, these two provisions of the rule describing the requirements for soil and water table information are incomplete and confusing. **To provide clearer specifications and requirements is proposed to separate the requirements for non-karst terrain areas from karst terrain areas in the rule and specifically address each individually.**

327 IAC 19-12-2(b): The meaning of the term "application" is unclear as it applies to setbacks since the rule requires minimum setback provisions to land application sites and application of manure and wastewater. To more clearly identify that this applies to the time of application for approval the following change is proposed.

refer to the application for approval Since this provision addresses flood plains and flood water the following change is proposed.

(b) Waste management systems must be located to maintain the minimum setback distances from the following features that are known and identifiable at the time **an of** application **is submitted for approval:**

327 IAC 19-12-2(b)(2)(D) and (4)(A): It is noted that different setback requirements are stated in these two provisions for water wells – 300 feet for off-site water wells and 100 feet for on-site water wells. A consistent standard for water wells is required. This provision of the rule sets up a double standard that is unnecessary. A setback of 100 feet is sufficient for all water wells. **It is proposed that 19-12-2(b)(2)(D) be deleted and 19-12-2(b)(4)(A) be changed to state "(A) on-site and off-site wells".**

327 IAC 19-12-2(b)(3): This provision of the rule is not consistent with the purpose of the rule stated in 19-1-1 to implement IC 13-18-10 and to protect human health and the environment from threats to water quality. The setback requirement stated in 19-12-2(b)(3) do not related to threats to water quality. **It is proposed that 19-12-2(b)(3) be deleted and 19-12-2(b) be updated as follows.**

(b) Waste management systems must be located to maintain the minimum setback distances from the following features that are known and identifiable at the time **an of** application **is submitted for approval:**

- (1) One thousand (1,000) feet from a public water supply well or public water supply surface intake structure.
- (2) Except for subsection (c), three hundred (300) feet from:
 - (A) surface waters of the state;

- (B) drainage inlets, including water and sediment control basins;
- (C) sinkholes, as measured from the surficial opening or the lowest point of the feature; and
- ~~(D) off-site water wells.~~
- ~~(3) Four hundred (400) feet from existing off-site residential and public buildings.~~
- (3)(4)** One hundred (100) feet from:
 - (A) on-site **and off-site** water wells;
 - (B) property lines; and
 - (C) public roads.

327 IAC 19-12-2(c): As written this provision is unclear and confusing. It is interpreted that this applies to all manure storage facilities, including liquid and solid, thus preempting 19-12-2(b)(2) except for those manure storage facilities that only store water with no solids content. It is assumed that this applies specifically to solid manure storage facilities and not all manure storage facilities. The following change is proposed.

(c) A manure storage facility **used to store solid manure** ~~that contains solids~~ must be **located to** ~~maintained to have~~ a minimum setback of one hundred (100) feet from the features in ~~subdivision~~ **subsection** (b)(2) of this section.

327 IAC 19-12-2(d): This provision is difficult to understand. I believe that the intent of this provision is appropriate but as written is difficult to interpret and implement. Based on my interpretation, the following is proposed in place of 19-12-2(d) in the draft rule.

(d) If a feature identified in subsection (b)(2) of this section is constructed or changed to be located within the required setback distances to an existing waste management system, a new waste management system may be constructed to maintain the same setback between the existing waste management system and the feature, providing that:

- (1) the feature was not under the control of the owner/operator of the confined feeding operation; and**
- (2) the feature was constructed or changed after the application for approval for the existing waste management system was submitted to the department.**

327 IAC 19-12-3(a):

Draft rule definition repeated here for reference:

"Manure storage facility" -- any pad, pit, pond, lagoon, tank, building, or manure containment area used to store or treat manure, including any portions of buildings used specifically for manure storage or treatment.

It is appropriate to require that the combined storage capacity of all manure storage facilities provide at least 180 days of storage capacity for manure, waste liquids, precipitation that comes in contact with manure or becomes contaminated and contaminated runoff. The list of components enumerated in 19-12-3(a) requires additional clarification to be fully understood. Specifically, definitions that clearly describe waste from cooling systems, water tank wastes, net average rainfall, and normal runoff are needed to be able to correctly implement the rule. The following questions are examples of the unknowns raised by this list.

- What type of waste from cooling systems must be stored?
- What are water tank wastes?

- Is there a specific area that applies to net average rainfall?
- What is normal runoff and where does it apply?
- Without an understanding of what this refers to it is impossible to determine the required storage capacity to meet a 180 day requirement.

327 IAC 19-12-3(c): It is interpreted that the true intent of 19-12-3(c) is not accurately described in the proposed rule language. It does not seem reasonable to expect to store the expected precipitation from a twenty-five (25) year, twenty-four (24) hour precipitation event that falls directly on the area draining into the structure in the two (2) feet of freeboard. In addition, the recording of the available freeboard and documentation in the operating record are not specifically capacity and design requirements of manure storage facilities. **It is proposed that the recording of the available freeboard and documentation in the operating record be deleted from this provision and included in the requirements outlined for the operating record. The following changes are proposed to 19-12-3(c).**

(c) For any uncovered manure storage facilities, the design must include a minimum of two (2) feet of freeboard, measured from the lowest point of the top of the manure storage facility, to include the expected precipitation from a twenty-five (25) year, twenty-four (24) hour precipitation event that falls directly on the **surface area of the manure storage facility.** ~~draining into the structure.~~ Manure storage facilities must have clearly identified markers to indicate the required freeboard, ~~and that the required freeboard must be maintained. , recorded, and kept in the operating record.~~

327 IAC 19-12-3(d): This provision of the rule is complicated by the definition of "manure storage facility". This provision states that manure storage facilities may not be constructed in sand or gravel soils unless designed with an approved liner. The liner specifications included in the draft rule are specific to earthen manure storage facilities and are not appropriate for concrete pads, concrete or prefabricated tanks, buildings, or other manure containment areas that do not have an earthen base. Specific Unified Soil Classifications are included in 19-12-3(d) identifying the soil properties that have limitations. One of these classifications is not a sand or gravel soil, Pt. Pt is a peat, highly organic soil and should not be included in this list. To rectify this confusion and impractical application of this rule provision to non-earthen manure storage facilities the following changes are proposed.

(d) Manure storage facilities **that are earthen or utilize an earthen base** may not be constructed in sand or gravel soils, ~~(Unified Soil Classification: of Pt, GW, GP, GM, GC, SW, SP, SM, SC),~~ unless specially designed with an approved liner, in accordance with section 5 of this rule.

327 IAC 19-12-3(e)(2): The following edit is proposed to better state the intent of this provision.

- (e) The base of a manure storage facility must be above bedrock as follows:
- (1) If not in karst terrain, the base must be at least two (2) feet above bedrock.
 - (2) If in karst terrain, the base must be at least five (5) feet above bedrock, unless additional **separation** distance is determined **to be required** by the commissioner based on information provided under section 1(b) of this rule.

327 IAC 19-12-3(f): This provision of the draft rule is prescriptive, limited in its scope, and makes direct reference to date certain design manuals and specifications limiting the ability to include realistic design parameters and construction techniques during the duration of the rule. **It is recommended that 19-12-3(f) be deleted and 19-12-3 be reorganized.**

I can clearly recall the discussion pertaining to a direct reference to the NRCS 590 Practice Standard in the current rule and numerous discussions with IDEM staff since the last adoption about the challenges that occur in the implementation of the rule when a date specific or version specific reference is included in rule language. It is noted that the direct reference to the NRCS 590 Practice Standard has been deleted from the draft rule. In IDEM's own response to comments regarding the NRCS 590 Practice Standard it recognizes the limitations created by a date or version specific reference to standards, design manuals, specifications, and guidance by stating that:

"The NRCS conservation practices are updated on a regular basis and IDEM finds it cumbersome to go thru a rule change when the NRCS updates the standard. The IDEM CFO rule will propose a standard that reflects the intent and general contents of the NRCS 590 standard."

This same challenge exists for the references identified within this rule "Rectangular Concrete Manure Storage, MWPS-36; Second Edition; Midwest Plan Service" and "NRCS Standard: Construction Specification, Concrete Construction, October 2005 Edition". These design manuals and specifications are also updated periodically and it would be cumbersome to go through a rule making to adopt the updated standards. It is noted that the IDEM staff currently rely upon the second edition of Midwest Plan Service "Rectangular Concrete Manure Storage, MWPS-36" rather than the first edition for guidance. If date specific or version specific references to design manuals and specifications are included in the rule, standards will be frozen in time and IDEM staff, producers, and designers will no longer have the ability to rely upon current and up-to-date information. Recognizing the importance of standards and specifications for the design and construction of waste management systems, it is recommended that these types of references be addressed in guidance.

In addition to the challenges discussed above, 19-12-3(f) applies to manure storage facilities which include any pad, pit, pond, lagoon, tank, building, or manure containment area. As currently written, 19-12-3(f) will require any pad, pit, pond, lagoon, tank, building, or manure containment area constructed of concrete to comply with requirements specifically developed for rectangular liquid concrete manure storages or be designed and certified by a registered professional engineer. This provision would require that any manure storage facility that is not a rectangular concrete manure storage, such as a solid manure storage or dry litter stack building be designed and certified by a professional engineer.

I appreciate the significance of a professional engineer certification for unique and special designs but do not agree that a professional engineer's design and certification is required for concrete manure storage facilities. Concrete is a predictable, consistent, and reliable building material. Many of the concrete manure storage facilities submitted to IDEM for approval are similar and include common features and components making it unnecessary to require that a professional engineer's certification be provided. It would seem reasonable to expect that if a professional engineer's certification is required for all concrete manure storage facilities then it will not be necessary for IDEM to review the design and construction specifications as part of the approval process, therefore expediting the review process.

As a design professional, I am concerned that individual or specific design considerations and construction specifications are singled out in the draft rule without sufficient consideration being given to the type of manure storage facility and existing site conditions. Specifically, 19-12-3(f)(3) requires a minimum soil bearing capacity for all manure storage facilities of 2,000 pounds per square foot. Remembering that a manure storage facility includes any pad, pit, pond, lagoon, tank, building, or

manure containment area it is not appropriate to establish design standards that are not practicable or applicable. This prescriptive approach to design is not sound, adds unnecessary costs, and limits and/or prohibits realistic designs in areas that do not meet these minimum requirements.

327 IAC 19-12-5(b) and (c): This provision of the rule establishes standards and construction requirements that are restrictive, cost prohibitive, and unnecessary to protect human health and the environment from threats to water quality. These requirements are not based on sound technical information, include requirements that are costly to implement with no added benefit, and limit the use of appropriate liner materials due to the prescriptive nature of this rule provision. The most important criterion for a liner is to establish a physical barrier for containment that does not leak or seep beyond a practicably attained and maintained rate. This is effectively achieved by establishing an allowable seep rate performance standard. Compliance with the performance standard achieves the desired result. It is neither necessary nor appropriate to outline specific design parameters and construction specifications without fully considering the interaction of these requirements on the design.

As an example, the requirements of 19-12-5(b)(1)(A) and (B) are all part of the design process but are not mutually exclusive of each other and as stated are specific to one manure storage facility configuration – an 8.5 foot liquid depth, two foot thick liner with a hydraulic conductivity of 1×10^{-7} cm/s. The specific inclusion of these design parameters presents a conflict in the design process and establishes a dual or non-uniform standard for liners, imposing greater unnecessary requirements on many structures in order to comply with the competing requirements thus adding unnecessary costs. **It is proposed that 19-12-5(b) be changed to establish a performance standard for seepage such that an appropriate design can be developed to meet the performance standard.**

It is agreed that the seepage standard for Indiana needs to be updated but in my professional opinion the proposed seepage rate of 1/56 cubic inch per square inch per day is too restrictive. A review of many state seepage standards for earthen manure storage facilities shows that the requirements range between 1/4" per day to 1/36" per day. In several states (including states with porous soil types such as sand, sandy loam, and loamy sand), a seepage standard of 1×10^{-6} cm/sec (~1/32 cubic inch per square inch per day) has been established. **It is proposed that the seepage standard be changed to 1/32 cubic inch per square inch per day. This establishes a protective standard that is still one of the more restrictive standards established by other state environmental agencies.**

At 19-12-5(b) the draft rule states that manure storage facilities must meet specific design standards. The requirements of 5(b)(1) through (6) are very specific and represent an escalating design standard based on the in-situ soils. There is no sound technical basis for this escalating design standard and strongly suggests that expensive and intensive site investigations will be required to determine and demonstrate compliance with these standards. Earthen manure storage facilities are an appropriate and effective method of collecting, storing, and treating manure and wastewater and do not present an undue risk to water quality. A practical performance standard for earthen manure storage facilities is necessary that achieves the purpose of this rule but at the same time does not eliminate or prohibit the use of appropriate manure storage facilities for all sizes of animal feeding operations.

It is agreed that highly permeable soils are not suitable materials for liner construction and typically require an alternative liner material or construction technique. However, the same performance standard used for less permeable soils based on allowable seepage rate is also suitable for these types of soils. It should not be a standard requirement that monitoring wells be installed in conjunction with a manure storage facility based strictly on the soil properties. Authority is clearly defined in 19-4-1 for the commissioner to require additional design standards on a site by site basis if necessary to

protect human health or the environment. Many of the design, construction, and monitoring specifications as presented in 19-12-5(b) are additional design standards and are not necessary as a standard requirement to protect human health and the environment due to threats to water quality. It is noted that a 40 mil HDPE liner is not 40 millimeters (1.575 inches) thick. It is proposed that 19-12-5(b) and (c) as currently stated in the draft rule be deleted and replaced to state:

(b) Liners used in manure storage facilities must meet the following design standards:

- (1) have a seepage rate that does not exceed one-thirty-second ($1/32$) cubic inch per square inch area per day.**
- (2) liners constructed of earthen materials shall be at least eighteen (18) inches thick.**
- (3) geomembrane liners, such as a high density polyethylene (HDPE) or polyvinyl chloride (PVC), shall be at least forty (40) mil (1.0 mm thick)**
- (4) geomembrane liners require a gas release system to prevent gas build-up beneath the liner.**

327 IAC 19-12-6(c): Vegetative management systems (vegetative treatment systems) provide an effective method for managing contaminated runoff and other many other wastewaters generated on animal feeding operations. It is important that the rule not restrict the appropriate and effective implementation of vegetative management systems for treating and managing wastewater. At 19-12-6(c) many soil types are listed as prohibit soil types for vegetative management systems. Generally, these soil types are not suitable for vegetative management systems. However, the design of a vegetative management system includes consideration of the soil permeability. An additional statement is needed to allow for the installation on soils that have been demonstrated as meeting the design soil permeability in contrast to the typical Unified Soil Classification System predicted properties. For example, silty sand (SM) and clayey sand (SC) can have soil permeability values within the design range for vegetative management systems but are eliminated due to the direct prohibition in the rule. It is proposed that the following be added to 19-12-6(c) as 19-12-6(c)(10).

(10) except for soils within these soil classifications that according to USDA NRCS Soil Survey data or on-site investigation have a soil permeability of 2.0 inches per hour or less.

327 IAC 19-13-1(h): It is proposed that this provision of the rule be deleted. I can support appropriate, prudent, and meaningful sampling and analysis. However, this requirement does not meet any of these criteria. First, this provision does not specify what field tile to sample. Secondly, typical subsurface drainage tile systems consist of an expansive network of tile that cover many acres and potential land uses not related to the animal feeding operation that all connect and outfall at a specific point. Annual sampling of field tile outlets for ammonium-N (NH_4) rather than ammonia (NH_3), a gas, will not provide any meaningful information regarding the potential impact of an animal feeding operation on water quality.

327 IAC 19-14-1: This provision appears to be clear as to the applicability to and responsibility of the animal feeding operation. However, some uncertainty may still exist. It is appropriate to require that land application of manure, litter, or process wastewater that is controlled by the permittee be conducted in accordance with the requirements of the rule. In situations where the permittee does not control the cropping program, crop nutrient and fertilizer decisions, and land application of manure on land not owned by the permittee, the permittee cannot dictate the land management practices. This is particularly problematic on land that a land use agreement has been obtained to demonstrate that

sufficient land is available to manage the manure generated but the permittee does not control the land or make the land management decisions. To clarify this distinction the following is proposed.

- Sec. 1. Land application of manure, litter, or process wastewater to land that is:
- (1) owned by the permittee;
 - (2) rented **and land application decisions are controlled** by the permittee; or
 - (3) utilized by the permittee under an agreement for land use **and land application decisions are controlled by the permittee**
- shall be done in accordance with the requirements of this rule.

327 IAC 19-14-2(a)(2): This is confusing and unclear. It appears to be out of place and may need to be deleted.

327 IAC 19-14-2(b): It is appropriate to expect that land application of manure be documented in the operating record. However, the requirements of this rule provision place an unnecessary burden on the producer to prepare and maintain in the operating record a land use agreement as described in 327 IAC 19-7-5(a)(4). The land use agreement described in 19-7-5(a)(4) is a part of the Manure Management Plan and is required to demonstrate that sufficient acreage is available to manage and land apply the manure and wastewater generated by the animal feeding operation during the approval term of the most recent approval. It is not necessary to have a land use agreement for all acreage utilized for the application of manure. It is more important to document the application of the manure in accordance with the rule than to document a potentially short-term agreement for land used to utilize the manure. This provision does not add to the purpose of the rule to protect human health and the environment from water quality threats and should be deleted. **It is proposed that 19-14-2(b) be deleted and 19-14-2 be reorganized.**

327 IAC 19-14-2(c): There is no 327 IAC 19-3-5 included in the draft rule as referenced in this provision. It is believed that the correct reference is 327 IAC 19-14-7.

327 IAC 19-14-2(d): This provision appears to be incomplete as written leading to confusion in an accurate interpretation. In the reorganization of this section this would be 19-14-2(c). The following changes are proposed.

(d) Copies of any written waivers **documenting** related to a reduction of the **manure application setback to** property lines ~~setback distances~~ must be kept in the operating record.

327 IAC 19-14-3(a): The requirements for soil borings and seasonal water table information at 19-7-1(c)(7) are incorrectly referenced in this provision of the rule. It is believed that the correct reference is 19-7-1(c)(5).

327 IAC 19-14-3(b): This provision is unclear and confusing. The intent of this provision is to require that the agronomic rate of application not exceed the nitrogen (N) requirements of the current or planned crops. The inclusion of "potentially available nitrogen" in this rule provision and in many other places confuses the true intent and objective of the rule. An agronomic rate of application is the rate of application of nutrients to plants that is necessary to satisfy the plants' nutritional requirements. Potentially available nitrogen is the amount of nitrogen as a crop nutrient that is available from manure application or fertilizer application to meet the agronomic rate of application. Many factors impact the amount of potentially available nitrogen and must be taken into consideration when realistically

planning a manure application to meet the agronomic rate of application. Some of these are realistic losses due to handling and timing of manure application.

It is agreed that it is irresponsible environmentally to plan manure application based on excessive losses of nitrogen due to the time of year of the manure application. However, it is just as irresponsible to ignore that losses due to handling and timing do occur and pretend that do not exist. To properly address losses due to timing and handling these two topics need to be separated and considered individually. This is a critical issue as it relates to manure application rates, proper utilization of manure as a soil amendment and crop nutrient source and a realistic approach and expectation must be determined.

For this provision, the following changes are proposed.

(b) The agronomic rate **of application of nitrogen** ~~for potentially available nitrogen~~ must not exceed the nitrogen (N) requirements of current or planned crops of the upcoming growing season as documented in the operating record.

327 IAC 19-14-3(c): Manure application rate decisions that include consideration of phosphorus-based application rates is an important and substantial change to this rule. The implications and ultimate impacts of this change cannot be taken lightly. For many years, manure application rates have been based on the agronomic rate of application of nitrogen. With the changes proposed in this rule, manure application rates will be determined by the agronomic rate of nitrogen and phosphorus for the current **and** planned crops of the upcoming crop rotation. Nitrogen decisions will need to be based on the upcoming crop and phosphorus decisions will need to be based on the upcoming crop rotation.

To make this transition from nitrogen based application rates to nitrogen/phosphorus based application rates a time period of adjustment is required. As a result of in-depth discussions with Purdue University Agronomy Department faculty, a ten (10) year transition plan was developed. This plan was developed with the primary objective of reducing soil phosphorus test levels while maintaining a realistic and environmentally protective phase time period. Based on input from Purdue University a maximum soil phosphorus test level of 400 ppm was established and is supported by Purdue University as being protective and practical in the short-term to achieve the goal of lowering soil phosphorus test levels. A graduated scale of phosphorus application rates dependent upon soil phosphorus test levels was develop and previously proposed by the Livestock and Poultry Rule Revision Group to the Indiana Department of Environmental Management.

I am in support of the proposed phosphorus application rate phase-in proposal and recommend that it be included in the proposed rule in place of the proposed language presented in the draft rule. This is a proactive plan to reduce soil phosphorus test levels, takes immediate action towards that objective, is reasonable and practical to implement, is based on sound science, and establishes a phosphorus management and land management strategy consistent with the purpose of this rule.

It is noted that for soil phosphorus test levels up to 200 ppm the Livestock and Poultry Rule Revision Group proposal and the draft rule are consistent. It is also worth noting in the draft rule that for soil phosphorus test levels above 200 ppm the draft rule does not require any change for up to three years and does not establish an upper limit for soil phosphorus test levels delaying the call to action to meet the objective to reduce soil phosphorus test levels. After year three (3) under the proposed rule, 327 IAC 19-14-3(c) outlines the requirements for manure application rates based on soil phosphorus test levels. As written, 19-14-3(c)(1) provides for nitrogen based application rates for soils with a test level below 50 ppm; 19-14-3(c)(2) provides for an application rate at 1.5 times the total phosphorus crop

removal rate for soils with a test level between 50 and 100 ppm; and 19-14-3(c)(3) provides for an application rate at 1.0 times the total phosphorus crop removal rate for soils with a soil phosphorus test level of greater than 100 ppm. It does not appear that after the six year phase-in on fields with a soil phosphorus test above 200 ppm there is no longer an upper limit established in the current draft rule. As written this would allow for continued land application at one times the total phosphorus crop removal rate but is in conflict with the goal of reducing soil phosphorus test levels.

The proposed phosphorus application rate plan presented by the Livestock and Poultry Rule Revision Group clearly outlines a strategy for reducing soil phosphorus test levels and includes additional safeguards after year 10 to protect surface water resources by requiring a Soil Conservation Practice Plan for high soil phosphorus test level fields. The Table presented in the Livestock and Poultry Rule Revision Group comments is repeated here for reference. **It is proposed that 19-14-3(c) be deleted and replaced with the Table below.**

Table: Phosphorus Application Rate Limitations

Soil test level (ppm)	YEAR			
	1-2	3-5	6-10	10+
0-50	N based	N based	N based	N based
51-100	1.5 x P crop removal	1.5 x P crop removal	1.5 x P crop removal	1.5 x P crop removal
101-200	1.0 x P crop removal	1.0 x P crop removal	1.0 x P crop removal	1.0 x P crop removal
201-250	0.9 x P crop removal	0.75 x P crop removal	0.75 x P crop removal	0.75 x P crop removal with SCPP demonstrating soil loss below allowable T
251-275	0.9 x P crop removal	0.75 x P crop removal	0.5 x P crop removal	0.5 x P crop removal with SCPP demonstrating soil loss below allowable T
276-300	0.9 x P crop removal	0.75 x P crop removal	0.25 x P crop removal	0.25 x P crop removal with SCPP demonstrating soil loss below allowable T
301-350	0.7 x P crop removal	0.5 x P crop removal	0	0
351-400	0.7 x P crop removal	0.25 x P crop removal	0	0
400+	0	0	0	0

327 IAC 19-14-6: Setback requirements for injection and single-pass incorporation have been deleted from this provision. It is assumed that the reference to incorporation is intended to include injection and single-pass incorporation. If this is the intent, then I disagree that the setback requirements should be increased for injection and single-pass incorporation. **It is proposed that injection and single-pass incorporation be added back to the setback table allowing for efficient land use and management associated with the application of manure and wastewater using injection application methods.** There does not appear to be a sound basis for changing these setback requirements and they should remain the same as currently outlined in 327 IAC 16-10-4.

327 IAC 19-15-2: It is not always necessary to have all of the manure removed from the manure storage facility to adequately remove the environmental threat and decommission a manure storage facility. Additional options are necessary to allow for alternative methods for closure or decommissioning rather than completely removing the manure from a manure storage facility.

A provision allowing a producer to request an alternative compliance approach to the requirements outlined in 19-15-2 needs to be added to this section of the rule. **It is proposed that an alternative compliance option be added to Section 15 of the rule.**

Conclusion:

Thank you for the opportunity to comment on this draft of the new rules concerning confined feeding operations. It is clear that substantial work has been conducted by the Indiana Department of Environmental Management in preparing these draft rules. I look forward to continued participation in the development of these rules.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael A. Veenhuizen".

Michael A. Veenhuizen, Ph.D.
President and Senior Engineer
Livestock Engineering Solutions, Inc.